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EXAMINER

UHLIR, NIKOLAS J

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/740,345

Applicant(s)

MUKAIDA, MINORU

Examiner

Nikolas J. Uhler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 7/25/02.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 2-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 7 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, claim 7 requires the solution-forming agent to be a solvent capable of diluting the binder, including a solvent which dilutes the binder by colloid formation. This implies that the solution-forming agent of claim 1 could be a material other than a solvent. However, no other materials except solvents are presented in the disclosure. Thus, it is unclear to the examiner what exactly is encompassed by the term "solution forming agent."

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 2-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craven (US3878147) in view of The Encyclopedia of Polymer Science, Vol. 3, November 1985, pg. 552.
5. The applicant should note that both Craven and the Encyclopedia reference were enclosed with the office action dated 2/28/02.
6. The following limitations in claims 2-26 have not been considered by the examiner as they are directed towards the intended use of a claimed

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composition: "which is applied to an object in the form of a thin film having a viscosity of 100,000 cp or less and a thickness of 10 $\mu$ m or less" (claim 2), "wherein the viscosity of said thin film is 10,000-100,000 cp" (claim 14), "wherein said viscosity is 10,000-50,000" (claim 15), "wherein said viscosity is 10,000-20,000" (claim 16), "Wherein said film has a thickness of 0.01 to 10 $\mu$ m" (claim 17), "Wherein said thickness is 0.01 to 1 $\mu$ m" (claim 18), "wherein said thickness is 0.01-0.1 $\mu$ m" (claim 19)

7. The phrases listed above are intended use limitations and do not appear to be further limiting in so far as the structure of the product is concerned. "[I]n apparatus, article, and **composition** claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. **If the prior art structure is capable of performing the intended use, then it meets the claim.** In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02.

8. Further, The limitations "which are generated by condensation action of an external substance during adhesion" in claim 6, and "wherein said exaternal substance is water" in claim 26 are product-by-process limitations and do not appear to be further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The

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patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. In the instant case the base polymer could have been generated via another process, such as through polymerizing monomers with a catalyst and still possess the structural properties of the final product.

9. With respect to the compositional limitations of claim 2 (that is, a polymer mixed with a solvent), Craven teaches a composition that is used to increase the friction of surfaces on ice, particularly the surfaces of automobile and truck tires (column 1, lines 5-8). The composition is a mixture of a binder and fine particles that possesses excellent adherence to rubber substrates and provides a high level of friction on icy roads (column 1, lines 21-25). The composition comprises 5-25% by weight of a soluble elastomer, 43-92.99% by weight of a solvent for the elastomer, and 2-20% by weight of dispersed inorganic particles having a particle size of about .2-105  $\mu\text{m}$ . Thus, as Craven teaches a mixture comprising a polymeric binder and a solvent, the compositional limitations of claim 2 are met.

10. Regarding the limitations of claim 3, wherein the applicant requires an energy consumption efficiency improving agent wherein the flexible binder adheres to an organic material and an inorganic material and has a viscosity of 100,000cps or less, wherein the solution forming agent is present in an amount resulting in the viscosity of the mixture being 100cp or less. Although Craven

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does not teach the viscosity of the coating composition as a whole, Craven does teach a specific example utilizing a coating composition comprising the elastomer "Kraton" 1102. This elastomer is a polystyrene-polybutadiene-polystyrene block copolymer having a viscosity of 400cp (column 3, example 1).

11. Craven does not teach a coating composition that comprises a flexible polymer binder and a solution forming agent, wherein the solution forming agent is present in an amount necessary to make the viscosity of the mixture <100 cp

12. However, The Encyclopedia of Polymer Science, Vol. 3, November 1985, pg. 552 teaches common coating methods and the viscosity range of compounds that are coated utilizing those methods. The examiner takes the position that the viscosity of a coating composition is a results effective variable. It would have been obvious to one with ordinary skill in the art to optimize the viscosity of the coating composition of Craven to meet the requirements of the coating method to be utilized.

13. Regarding the limitations of claim 4, wherein the applicant requires an energy consumption efficiency improving agent that further comprises an antislipping agent of fine particles having an average diameter of 10 $\mu$ m or less. These limitations are met as set forth above for claim 2 above, as Craven teaches adding particulate matter having an average diameter of about 0.2-105 $\mu$ m to the coating solution.

14. Regarding the limitations of claims 5 and 6, wherein the applicant requires the energy consumption efficiency improving agent to contain a base material for the polymer binder that comprises one of the materials listed. Craven et al.

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teaches that suitable elastomers for the coating composition include polyurethane, as well as a number of other elastomers. It is the examiners position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to select polyurethane as the flexible polymeric binder, as polyurethane is taught by Craven to be equivalent to the other binders listed. Thus, as polyurethane is listed in claims 5 and 6 as a suitable material for the binder, the limitations of claims 5 and 6 are met.

15. Regarding the limitations of claim 7, wherein the applicant requires the solution-forming agent to be a solvent that is capable of diluting the binder, including a solvent that dilutes the binder by colloid formation. This limitations is met as set forth above for claim 2, as craven clearly teaches use of a solvent, or a blend of a solvent and a non-solvent for the elastomer (column 1, lines 60-65). It should be noted that in this passage Craven teaches that a blend of solvent and non-solvent is used when the polymer is to be "dispersed" in solution, which the examiner has interpreted to mean that a colloidal solution. This meets the requirements of the second portion of claim 7, wherein the applicant states that the solvent can be one that dilutes the binder by colloid formation.

16. Regarding the limitations of claim 8, wherein the applicant requires the energy consumption efficiency improving agent to comprise a an antislipping agent selected from silicon oxide, aluminum oxide, cerium oxide, or silicon carbide, or a finely particulate inorganic material. Craven teaches that the inorganic particles are typically selected from aluminum oxide, silica

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(synonymous with silicon oxide), silicon carbide, and other inorganic particles (column 2, lines 8-22).

17. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to select silicon oxide, aluminum oxide, or silicon carbide as the fine particulate inorganic material in Craven.

18. One would have been motivated to do so due to the fact that Craven teaches that silicon oxide, aluminum oxide and silicon carbide are equivalent to the other inorganic particles listed.

19. Regarding the limitations of claim 9, wherein the applicant requires an energy consumption efficiency improving method, wherein the energy consumption efficiency improving agent is applied to the surface of object in the form of a thin film that has a thickness of 10 $\mu$ m or less. Craven teaches coating the coating composition onto the surface of an automobile tire via a coating method such as spray coating (column 2, lines 62-68). Further, Craven teaches that a film that is 1-2 mils thick will typically remain on the tire for 5-10 miles, depending on road conditions (column 3, lines 13-15). It is the examiners position that the thickness of the film is a result effective variable and it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the thickness of the film to suit the distance to be traveled. Shorter distances would require a thinner coating, thereby conserving material.

20. Regarding the limitations of claims 10 and 11, wherein the applicant requires an article improved in energy consumption efficiency having a contact surface to be brought into contact with a surface of a support, and a thin film



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formed on the contact surface by the application of an energy consumption efficiency improving agent, wherein the film has a thickness of 10 $\mu$ m or less (claim 10), and the article is a vehicle tire or footwear (claim 11). These limitations are met as set forth above for claim 9.

21. Regarding the limitations of claim 12, wherein the applicant requires and energy consumption efficiency improving agent comprising a mixture containing 1.42-1.58 weight % of a flexible polymer binder and 94.81-98.5 weight % of a solution forming agent. Although Craven does not specifically teach the required composition, it is the examiners position that the amount of solvent and the amount of polymer in a mixture are results effective variables which impact the viscosity of the composition. Higher amounts of polymer in a coating composition increase viscosity, whereas higher amounts of solvent decrease viscosity. In light of the fact that Craven is a coating composition, and the teachings in The Encyclopedia of Polymer Science of how different coating methods utilize coating solutions having different viscosities, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the amount of polymer and solvent disclosed to achieve a desired viscosity of the coating solution, and thus be able to utilize the coating composition in a desired coating process.

22. Regarding the limitations of claim 13, wherein the applicant requires an energy consumption efficient improving agent comprising 0-3.77 weight % of an anti-slipping agent. This limitation is met as set forth above for claim 2, as Craven clearly teaches a composition containing 2-20% hard inorganic particles

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(equivalent applicants anti-slipping agent). As the range in Craven overlaps the range required in claim 13, the limitations of claim 13 are met.

23. Regarding the limitations of claims 14-19, these limitations are met as set forth above for claim 2, as they are directed towards an intended use that can be met by the composition of Craven.

24. Regarding the limitations of claim 20-22, wherein the applicant requires the viscosity of energy consumption efficiency improving composition to be in the range of 20-100cp (claim 20), more specifically 20-50cp (claim 21), and even more specifically 20-35cp (claim 22). These limitations are met as set forth above for claim 3.

25. Regarding the limitations of claim 23-25, wherein the applicant requires the average particle diameter of the anti-slipping agent to be between 10nm-10 $\mu$ m (claim 23), specifically 10nm-1 $\mu$ m (claim 24), still more specifically 10nm-100nm (claim 25). Craven teaches that the particle size of the inorganic filler mater is "about 0.2-105 $\mu$ m" (column 2, lines 17-18). It is the examiners position that "about" .2 $\mu$ m encompasses .1 $\mu$ m, and thus reads on the limitations of claims 23-25. Thus, the limitations of claims 23-25 are met.

26. Regarding the limitations of claim 26, these limitations are met as set forth above for claim 6.

27. Claim 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Craven as modified by The Encyclopedia of Polymer Science as applied to claim 2 above, and further in view of Sakai et al. (US4501808).

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28. Craven fails to teach a energy consumption efficiency improving agent utilizing isopropyl alcohol as the solution forming agent, as required by claim 27.

29. However, it should be noted that Craven does teach utilizing solvent such as methyl ethyl ketone, acetone, methylene chloride, and carbon tetrachloride as suitable solvents for dissolving for elastomer such as polyethylene, styrene-butadiene's, etc... (column 1, lines 50-column 2, line 7)

30. Further, Sakai et al. teaches coating composition that comprises a binder material and a solvent, wherein the binder is selected from materials such as styrene butadiene's, polyethylene, and other materials, and the solvent is selected from methyl ethyl ketone, isopropyl alcohol (isopropanol), acetone, methylene chloride, and carbon tetrachloride (column 23, line 65-column 4, line 35).

31. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize isopropyl alcohol as the solvent in Craven.

32. One would have been motivated to make such a modification due to the teaching in Sakai et al. that Isopropyl Alcohol is equivalent to methyl ethyl ketone, Isopropyl alcohol, acetone, ethylene chloride, and carbon tetrachloride as a solvent for many of the same binder resin materials disclosed in Craven, specifically polyethylene and styrene-butadiene's.

### ***Response to Arguments***

33. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

***Examiners Note***

34. After careful review of the specification and the applicants arguments, it appears to the examiner that the applicants invention lies in an article that has been coated with film. Bearing this in mind, the examiner respectfully submits that the applicant may better define the invention in the claims if the applicant claimed the invention as a coated substrate and defined the coating composition and the film structure from this type of preamble, as opposed to claiming a coating composition and defining the coating composition by its intended use. It is further submitted by the examiner that the applicant would better be able to define the invention in the claims if the coating composition/coated film were claimed in terms of their respective compositions (i.e types of resins, types of solvents, amounts of each, etc...), as opposed to their physical properties (i.e viscosity). It should be duly noted by the applicant that no guarantee of patentability is purported by the examiner in this comment if claims of these type are presented by the applicant in a further communication, as further search and examination of these claims on the merits will be required before such a determination can be made.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhler whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

*nju*

nju

October 17, 2002



**STEVAN A. RESAN**  
**PRIMARY EXAMINER**